School of Innovation, Design and Engineering

7. Modeling and Verification of Timed Finite State Machines

This document provides the laboratory instructions for the second session on Model-based testing. The objective of the lab is to get experience of modeling and verifying properties of timed systems.

The exercises are performed using the UPPAAL tool and a set of pre-implemented models.

Please use the following link section to install UPPAAL 4.0:

http://www.it.uu.se/research/group/darts/uppaal/download.shtml

To find out more about UPPAAL, read this short introduction:

http://www.it.uu.se/research/group/darts/uppaal/about.shtml#introduction

Exercise 2 – Modeling and verification with timing

In this exercise we will work with a model of a trigger and then (from task 3) continue with adding time to the Alternating bit protocol (refer to the protocol description in the previous exercise).

The exercises are performed using the UPPAAL tool and a set of pre-implemented models.

Tasks:

1. Unzip the pre-implemented models from the following link: http://www.promptedu.se/promptwp/wp-content/uploads/2014/10/7.Lab2_.zip
2. Open the provided file `trigger.xml` that contains a model of a simple periodic trigger.
3. The model contains a global clock called `global`. Is the receiver always in the state `On` when the clock `global` reaches `100`? If not, fix it.
4. Open the provided file `abp1.xml` to load the template used for the second part of this exercise.
5. The model is based on the description provided in the Exercise 1, but lacks the time-outs in sender.
6. Check whether the model is deadlock free.
7. Modify the model so that the sender waits five time units in location WaitAck0 and then resends the message by going back to location Send0.
8. Check again whether the model is deadlock free.
9. Check if sending a message will always result in received message.
10. Send the solutions containing the abp1.xml, abp1.q, `trigger.xml, and trigger.q` files to eduard.paul.enoiu@mdh.se.

Web:
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